5. The block copolymer of any one of claims 1-4, wherein R' is methyl.

6. The block copolymer of any one of claims 1-5, wherein R^2 is a C_{10}-C_{18} alkyl group, optionally substituted with a substituent selected from halo, alkoxy, alkylcarbonyl, alkoxycarbonyl, amido, and nitro.

7. The block copolymer of any one of claims 1-6, wherein R^2 is a C_{16} alkyl group, optionally substituted with a substituent selected from halo, alkoxy, alkylcarbonyl, alkoxycarbonyl, amido, and nitro.

8. The block copolymer of any one of claims 1-7, wherein R^3 is phenyl.

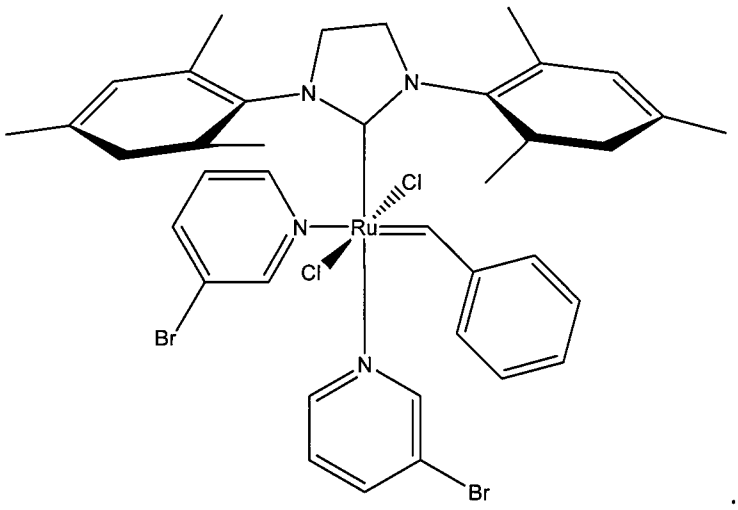
9. The block copolymer of any one of claims 1-8, wherein R^4 is a C_1-C_6 alkoxy group.

10. The block copolymer of any one of claims 1-10, wherein n is about 30 to about 350 and m is about 75 to about 900.

11. The block copolymer of any one of claims 1-10, wherein n is about 70 to about 200 and m is about 180 to about 500.

12. The block copolymer of any one of claims 1-11, which has the following structure:

14. The method of claim 13, wherein the ROMP catalyst is of the formula:



15. The method of claim 13 or 14, wherein hydrogenation is carried out in the presence of a Grubbs 2nd generation catalyst.

16. A self-assembled structure comprising a block copolymer of any one of claims 1-13.

17. A porous membrane prepared from the self-assembled structure of claim 16.